Hypothesis Concerning After-Meal Lethargy and Dynamics Between Hydration and Ketone Concentration

2026 May 10
Pierre L. Coulomb

The inconsistency with which post-meal lethargy is reported in patients is notable, but correlation with both dehydration and with recent exercise featuring muscle-wasting suggests that this lethargy is actually linked to the concentration of ketones in the blood relative to hydration level.

Ketones are able to cross the blood-brain barrier and have been studied in the context of both ketoacidosis and rare conditions such as phenylketonuria. Ketoacidosis can lead to coma, which could be viewed as an extreme manifestation of lethargy. *I make the argument that this lethargy is actually the byproduct of varying degrees of brain edema.*

Post-meal lethargy should not, necessarily, be treated as a healthy, normative phenomenon but, rather, it should be used to infer either that ketone levels are high due to recent vigorous exercise (a healthy explanation) or that hydration levels were insufficient at the time of the consumption of a meal and that not enough fluid was consumed with the meal (indicating that there is some correctable behavior which could be changed in the patient.

Post-meal lethargy is most commonly reported during large meals such as that served at holidays such as Thanksgiving and this holiday phenomenon has been variously attributed to either tryptophan or to the quantity of food ingested or to the consumption of alcohol. I would suggest that it's neither the content nor quantity of the food ingested, but rather, the tendency of the Thanksgiving meal not to be served with water but to be served with either wine, which is diuretic in its nature and therefore not hydrating, or with some other beverage other than water.

The formal nature of that meal socially precludes requesting beverages such as water prior to the serving of the meal, oftentimes entails sitting and socializing for hours whilst waiting for food to be served. A thirsty person might defer the consumption of water under those circumstances prior to a meal, if only because of the social nature of the occasion and the tendency for there to be a great deal of conversation between attendees. For reason that these people are talking and not drinking water, they are becoming dehydrated. When they finally eat their meal, their ketone levels relative to their hydration levels become excessively high, leading to lethargy.

Ketones are problematic for reason of their acidity and, under the condition of high acidity, the meninges responds to protect the brain by shunting what water is available to the area surrounding the brain in order to reduce the acidity of the CSF fluid. Severe edema of the brain would lead to coma, but mild edema could be predicted to produce mild signal synchronization disruptions which cause the urge to sleep.

Therefore, the phenomenon of post-meal lethargy, provided that the cause is not intense physical exertion just prior to the meal, should be explained by

medical professionals in the following manner: Dehydration prior to a meal causes blood acidity to increase. The consumption of the meal exacerbates this dehydration as fluids must be consumed in the digestive process. The increased acidity of the blood prompts the meninges to shunt water into the area surrounding the brain, constituting edema. This mild edema causes neural signals to become mildly desynchronized, resulting in the urge to sleep.